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PART IIa SUBJECT INDEX NUMBER

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SUBJECT INDEX—PART II

INTRODUCTION

The entries in this index refer to the abstracts by their serial number, not by the page number. The entries are grouped under headings (printed in bold type, e.g. "**Algebra**"). If a heading for a particular subject does not appear, the subject may be in the form of a cross-reference to another heading, perhaps of a more general nature. Many of the headings are subdivided by the use of subheadings, which are indented (i.e. printed slightly to the right) and commence with a small letter.

The information contained in the subject index is illustrated by following example:

main heading
Crystal electron states 'See also' crossreference to another heading
See also Colour centres
keyword
(file word)
helicon relaxation of electron spins 0-17901
polarons
subheading modifier line (entry) abstract number in 1970

Associated with the subheading "polarons" is a 'See' crossreference as follows:

Polarons *See Crystal electron states/polarons*

This means that for papers on "polarons" the reader should consult the subheading "polarons" of "Crystal electron states" as displayed above.

ARRANGEMENT OF HEADINGS AND SUBHEADINGS

The headings and crossreferences are arranged throughout the index in alphabetical order according to the "word by word" system. The subheadings are themselves arranged in alphabetical order under their respective headings.

ARRANGEMENT OF ENTRIES UNDER HEADINGS

Entries are arranged in four distinct groups as follows:

First group:	arabic numerals
Second group:	English alphabet (A-Z), roman numerals, Greek alphabet (excluding elementary particles)
Third group:	elementary particle symbols i.e. Greek and English alphabet e.g. μ (muon), p (proton)
Fourth group:	chemical formulae (including entries beginning with nuclei, e.g. ^{57}Fe)

CLASSIFIED LIST OF SUBJECT INDEX HEADINGS

In this list the headings are not arranged in alphabetical order, but are grouped into sections by subject, on the same basis as the arrangement in the fortnightly issues of Physics Abstracts. By using this list the reader can quickly determine all the headings which are appropriate to his subject, and then they can easily be found in the main index in their alphabetical position.

HEADINGS WITH NO ENTRIES

All the headings in current use in a given year are printed, even those for which there are no abstracts to be recorded. The latter are followed by the announcement "No entries". This confirms that these headings have not been dropped from the index, and entries may appear under them in subsequent issues.

NUCLEI, ELEMENTS, COMPOUNDS AND OTHER SUBSTANCES

Abstracts on nuclei whose mass number (or mass number range) is given are listed under a set of headings which begin "**Nuclei with. . . .** " e.g. Nuclei with $6 \leq A \leq 19$ where A is the mass number.

The names of elements, their compounds, a few compounds of special interest (e.g. "**Ruby**", "**Water**") and a few common materials (e.g. "**Wood**", "**Paper**") are included as headings or sub-headings (e.g. "**barium titanate**" under "**Barium compounds**"). Under these, as well as under the appropriate "subject" headings, are listed any abstracts which contain significant physical information about the element, compound or substance named.

Inorganic compounds of the elements are listed under the first element in the chemical formula, and all the compounds of a given element are grouped under a single heading (e.g. "**Sodium compounds**"). Alloys are listed under compounds of the named constituents e.g. Au-Ag alloys under "**Gold compounds**" and "**Silver compounds**". There are also four special headings for the common alloys: "**Aluminium alloys**", "**Copper alloys**", "**Iron alloys**", "**Nickel alloys**". Organic compounds are grouped under "**Organic compounds**", "**Polymers**", "**Plastics**" and under special substance headings such as "**Paper**", "**Proteins**", etc.; all the latter are listed at the end of the classified list of headings. Metallic co-ordination compounds when regarded as inorganic are listed under the appropriate metallic compound heading (not under organic compounds) e.g. Ni complex, bis(dimethylglyoximato)nickel(II) under "**Nickel compounds**"

CLASSIFIED LIST OF SUBJECT INDEX HEADINGS

The headings are grouped into sections on the same basis as the arrangement of the abstracts in the fortnightly issues of Physics Abstracts. A summary of the layout of these sections (these are actually further subdivided), is given below. Each section lists the headings which concern its subject and it follows that many of the headings are listed in several places.

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- Ion sources
- Particle accelerators/
  - accessories
  - betatrons
  - cyclotrons
  - linear
  - synchrotrons

12.00 NUCLEAR PHYSICS

Nuclear physics

12.10 NUCLEAR STRUCTURE AND ENERGY LEVELS

- Beta-ray spectra/
  - conversion electrons
- Gamma-ray spectra
- Gamma-rays/
  - angular distribution
  - internal conversion
- Gyromagnetic ratio
- Hypernuclei
- Mössbauer effect
- Nuclear excitation
- Nuclear forces
- Nuclear isomerism
- Nuclear magnetic resonance and relaxation
- Nuclear polarization
- Nuclei with A ⩽ 5
- Nuclei with 6 ⩽ A ⩽ 19
- Nuclei with 20 ⩽ A ⩽ 49
- Nuclei with 50 ⩽ A ⩽ 89
- Nuclei with 90 ⩽ A ⩽ 149
- Nuclei with 150 ⩽ A
- Nucleus/
  - electric moment
  - energy level transitions
  - energy levels
  - magnetic moment
  - models
  - size
  - spin and parity
  - theory

12.20 NUCLEAR DECAY AND RADIOACTIVITY

- Alpha-particles
- Alpha-particle spectra
- Alpha-particle spectrometers
- Alpha-particles/
  - absorption
  - angular distribution
  - detection, measurement
  - effects
  - scattering
- Beta-decay theory
- Beta-ray spectra/
  - conversion electrons
- Beta-ray spectrometers
- Beta-rays/
  - absorption
  - angular distribution
  - detection, measurement
  - effects
  - polarization
  - scattering
- Biological effects of radiations
- Chemical effects of radiations/
  - ionizing radiations
- Dosimetry
- Fallout
- Gamma-ray spectra
- Gamma-ray spectrometers
- Gamma-rays/
  - absorption
  - angular distribution
  - detection, measurement
  - effects
  - internal conversion
  - scattering
- Nuclear decay theory
- Nuclear bombardment targets
- Physical effects of radiations
- Radiation monitoring
- Radiation protection
- Radioactive dating
- Radioactive tracers
- Radioactivity/
  - decay periods
  - decay schemes
  - electron capture
- Radioactivity measurement/
  - apparatus
- Radiochemistry

12.30 NUCLEAR REACTIONS AND SCATTERING

- Chemical analysis/
  - by nuclear reactions
- Collision processes
- Nuclear bombardment targets
- Nuclear excitation
- Nuclear forces
- Nuclear reactions and scattering/
  - chemical effects
  - high energy ⩾ 1GeV
- Nuclear reactions and scattering due to/
  - alpha-particles
  - cosmic rays
  - deuterons
  - electrons
  - helium-3
  - hyperons
  - mesons
  - muons
  - neutrinos
  - neutrons
  - nuclei of Z > 2
  - nucleons
  - photons
  - protons
  - tritons
- Nuclear spallation
- Nuclei with A ⩽ 5
- Nuclei with 6 ⩽ A ⩽ 19
- Nuclei with 20 ⩽ A ⩽ 49
- Nuclei with 50 ⩽ A ⩽ 89
- Nuclei with 90 ⩽ A ⩽ 149
- Nuclei with 150 ⩽ A
- Radiation monitoring
- Radiation protection
- Scattering, particles

12.39 Nuclear fission and fusion

- Explosions/
  - nuclear
- Nuclear fission/
  - products
  - uranium
- Nuclear fusion
- Nucleons
- Plasma
- Thermonuclear reactions

12.40 NUCLEAR POWER STUDIES

12.43 Neutron Transport Theory

- Neutrons and antineutrons/
  - absorption
  - angular distribution
  - detection measurement
  - diffusion
  - effects
  - interactions
  - moderation
  - polarization
  - production
  - reflection
  - scattering
- Nuclear fission/
  - products
  - uranium
- Nuclear fusion
- Nuclear reactions
- Thermonuclear reactions

12.47 Nuclear Reactors

- Biological effects of radiations
- Chemical analysis/
  - by nuclear reactions
- Chemical effects of radiations/
  - ionizing radiations
- Dosimetry
- Nuclear fission/
  - products
  - uranium
- Nuclear fusion
- Nuclear reactions/
  - chemical effects
- Nuclear reactors, fission/
  - materials
  - operation
  - theory
- Nuclear reactors, fusion
- Physical effects of radiations
- Plasma/
  - devices
- Radiation monitoring
- Radiation protection
- Radiochemistry
- Thermonuclear reactions

13.00 ATOMIC AND MOLECULAR PHYSICS

Collision processes
Orbital calculation methods
Quantum theory

13.10 MASS SPECTROMETERS

- Mass spectra
- Mass spectrometers/
  - accessories
  - applications

13.20 ATOMS

- Atomic beams
- Atomic mass and weight
- Atoms
    - electron scattering
    - excitation
    - magnetic moment
    - structure
- Charge exchange
- Collision processes/
    - atoms
- Electron emission
    - photoelectric
- Elements
    - origin
    - relative abundances
- Exchange interactions
- Gyromagnetic ratio
- Helium/
    - gas
- Hydrogen/
    - ions
    - neutral atoms
- Ionization potential
- Luminescence
    - gases
- Optical pumping
- Orbital calculation methods
- Periodic system
- Spectra
    - atoms
- Spectral line breadth
- Stark effect
- X-ray spectra
    - absorption
    - emission
- Zeeman effect

13.25 Isotopes

- Isotope effects
- Isotope exchanges
- Isotope separation
- Isotopes
    - detection
    - relative abundances
- Mass spectra
- Mass spectrometers/
    - applications
- Radioactive dating
- Radioactive tracers
- Radiochemistry
- Tracers

13.27 Mesic and Muonic Atoms

- Atoms, mesic and muonic

13.30 MOLECULES

- Bonds
- Chemical shift
- Chemical structure
- Exchange interactions
- Isomerism
- Jahn-Teller effect
- Luminescence/
    - gases
- Magnetic resonance and relaxation
- Molecular weight
- Molecules/
    - configuration and dimensions
        - inorganic
        - organic
    - excitation
    - internal mechanics
    - electronic structure
    - electronic structure, inorganic
    - electronic structure, organic
    - nuclear coupling
    - relaxation
    - rotation
    - vibration
    - moments
- Nuclear magnetic resonance and relaxation
- Nuclear quadrupole resonance
- Optical pumping
- Orbital calculation methods
- Paramagnetic resonance and relaxation
- Scattering/
    - light
    - light, Brillouin spectra
    - light, Raman spectra
    - light, Raman spectra, inorganic^{c}
    - light, Raman spectra, organic
- Spectra/
    - inorganic molecules
        - diatomic
        - diatomic, radiofrequency
        - polyatomic
        - polyatomic, radio-frequency
    - inorganic liquids and solutions
    - inorganic solids
        - radiofrequency
    - molecules
    - organic molecules and substances
        - infrared
        - radiofrequency
- Spectral line breadth
- Stark effect
- Valency
- Zeeman effect

13.34 Dissociation. Free radicals

- Association/
    - gases
- Free radicals
- Heat of dissociation
- Molecules/
    - dissociation
    - dissociation energies

13.35 Macromolecules

- Association
- Heat of formation
- Isomerism
- Macromolecules
- Molecules/
    - configuration and dimensions, macromolecules
- Polymers
- Proteins

13.36 Mesic and Muonic Molecules

- Molecules, mesic and muonic

13.37 Intermolecular mechanics

- Charge exchange
- Collision processes/
    - molecules
- Molecular beams
- Molecules/
    - intermolecular mechanics

14.00 FLUIDS

- Boundary layers
- Flow/
    - two-phase
- Fluids
- Hydrodynamics
- Hydrostatics
- Oscillations
- Turbulence
- Viscosity
- Vortices
- Waves

14.10 MAGNETOHYDRODYNAMICS

- Magnetohydrodynamics
- Shock waves/
    - effects
- Turbulence

14.20 PLASMA

- Discharges, electric/
    - glows
    - high-frequency
- Nuclear fusion
- Nuclear reactors, fusion
- Plasma/
    - collison processes
    - electromagnetic waves
    - magnetohydrodynamics
    - production
    - shock waves
- Shock waves/
    - effects
- Space charge/
    - gas
- Thermonuclear reactions

4.24 Plasma Confinement, Devices and Measurements

Plasma/
  confinement
  devices
  diagnostics

14.26 Plasma Oscillations and Stability

Plasma/
  magnetohydrodynamics
  oscillations
  stability

4.30 IONIZATION

Charge exchange
Dissociation
on velocity
onization/
  gases
Ionization potential
Ionization, surface
Ions/
  recombination
  scattering
Photoionization/
  gases
Shock waves/
  effects
Space charge/
  gas

4.40 ELECTRIC DISCHARGES

Arcs, electric
Breakdown, electric/
  gases
Corona, electric discharge
Discharges, electric/
  glows
  high frequency
Gas-discharge tubes
Lightning
Sparks, electric
Sputtering

14.50 MECHANICS OF GASES

Acoustic streaming
Aerodynamics
Anemometers
Compressibility/
  gases
Condensation
Density/
  gases
Diffusion in gases/
  thermal
Flow/
  gases
  two-phase
Flowmeters
Gases
Humidity
Hygrometers
Jets
Manometers
Moisture
Pressure
Pumps
Radiation pressure
Supersonic flow
Turbulence
Viscometers
Viscosity/
  gases
Vortices
Waves

14.60 GASEOUS STATE

Absorption/
  acoustic waves
  acoustic waves, ultrasonic
  electromagnetic waves
  light
Association/
  gases
Breakdown, electric/
  gases
Conductivity, electrical/
  gases
  measurement
Conductivity, thermal/
  gases
  measurement
Dielectric properties of substances/
  gases
Diffraction/
  acoustic waves
  acoustic waves, ultrasonic
  electromagnetic waves
  light
Diffusion/
  acoustic waves
  electromagnetic waves
  light
Electrical properties of substances
Electroluminescence
Equations of state/
  gases
Gases
Helium/
  gas
Interference/
  acoustic waves
Joule-Thomson effect
Kinetic theory/
  gases
Lasers/
  gaseous
Luminescence/
  gases
Magnetic resonance and relaxation
Molecules/
  intermolecular mechanics
Nuclear magnetic resonance and relaxation
Nuclear quadrupole resonance
Optical properties of substances
Paramagnetic resonance and relaxation
Reflection/
  acoustic waves
  acoustic waves, ultrasonic
  electromagnetic waves
  light
Refraction/
  acoustic waves
  acoustic waves, ultrasonic
  electromagnetic waves
  light
Scattering/
  acoustic waves
  acoustic waves, ultrasonic
  electromagnetic waves
  light
Sorption
Specific heat/
  gases
Spectra
Statistical mechanics
Thermoluminescence
Transmission/
  acoustic waves
  acoustic waves, ultrasonic
  light
Velocity/
  acoustic waves
  acoustic waves, ultrasonic

14.65 Viscosity and Diffusion of Gases

Diffusion in gases/
  thermal
Transport processes
Viscosity/
  gases

14.70 MECHANICS OF LIQUIDS

- Acoustic streaming
- Bubbles
- Capillarity
- Cavitation
- Compressibility/
    - liquids
- Density/
    - liquids
- Diffusion in liquids
    - thermal
- Double refraction/
    - flow
- Drops
- Elasticity/
    - liquids
- Emulsions
- Films/
    - liquid
- Filters
- Flow/
    - liquids
    - two-phase
- Flowmeters
- Foams
- Hydrodynamics
- Hydrostatics
- Jets
- Liquid oscillations
- Liquid waves/
    - surface
- Lubrication
- Moisture
- Pressure
- Pumps
- Radiation pressure
- Rheology
- Schlieren systems
- Sprays
- Surface energy
- Surface tension
- Surface tension measurement
- Thixotropy
- Turbulence
- Viscometers
- Viscosity/
    - liquids
- Vortices
- Wetting

14.80 LIQUID STATE

- Liquids
- Liquid metals

14.82 Theory and Structure of Liquids and Solutions

- Association/
    - liquids
- Electron diffraction examination of materials
- Equations of state/
    - liquids
- Films/
    - liquid
- Heat of solution
- Liquid crystals
- Liquids/
    - structure
    - theory
- Neutron diffraction examination of materials
- Neutrons and antineutrons/
    - scattering
- Polymers
- Solubility
- Solutions
- X-ray examination of materials/
    - liquids

14.83 Viscosity, Surface tension and Diffusion

- Diffusion in liquids/
    - thermal
- Filters
- Membranes
- Osmosis
- Sorption
- Surface tension
- Surface tension measurement
- Transport processes
- Viscosity/
    - liquids

14.85 Thermal properties of Liquids

- Conductivity, thermal/
    - liquids
    - measurement
- Heat of solution
- Specific heat/
    - liquids
- Thermal expansion
- Thermodynamic properties

14.86 Acoustical Properties of Liquids

- Absorption/
    - acoustic waves
    - acoustic waves, ultrasonic
- Acoustic wave propagation/
    - ultrasonic
- Diffraction/
    - acoustic waves
    - acoustic waves, ultrasonic
- Diffusion/
    - acoustic waves
- Interference/
    - acoustic waves
- Reflection/
    - acoustic waves
    - acoustic waves, ultrasonic
- Refraction/
    - acoustic waves
    - acoustic waves, ultrasonic
- Scattering/
    - acoustic waves
    - acoustic waves, ultrasonic
- Transmission/
    - acoustic waves
    - acoustic waves, ultrasonic
- Velocity/
    - acoustic waves
    - acoustic waves, ultrasonic

14.87 Optical Properties of Liquids

- Absorption/
    - electromagnetic waves
    - light
- Chemical shift
- Diffraction/
    - electromagnetic waves
    - light
- Diffusion/
    - electromagnetic waves
    - light
- Double refraction
    - flow
- Electroluminescence
- Luminescence/
    - liquids and solutions
- Optical pumping
- Optical properties of substs.
- Reflection/
    - electromagnetic waves
    - light
- Refraction/
    - electromagnetic waves
    - light
- Scattering/
    - electromagnetic waves
    - light
    - light, Brillouin spectra
    - light, Raman spectra
    - light, Raman spectra, inorganic
    - light, Raman spectra, organic
- Spectra/
    - inorganic liquids and solution
- Thermoluminescence
- Transmission/
    - light

14.88 Electrical and Magnetic properties of Liquids

- Absorption/
    - electromagnetic waves
- Breakdown, electric/
    - liquids
- Conductivity, electrical/
    - liquids
    - liquids, electrolytic
    - measurement
- Dielectric properties of substs./
    - liquids and solutions
- Electrical properties of substs.
- Ionization, liquids
- Liquid metals
- Magnetic properties of substs.
- Magnetic resonance and relaxation
- Metals
- Nuclear magnetic resonance and relaxation
- Nuclear quadrupole resonance
- Paramagnetic resonance and relaxation
- Semiconducting materials
- Semiconductors

4.90 DISPERSIONS AND COLLOIDS

Aerosols
Centrifuges
Colloids
Disperse systems
Electrophoresis
Emulsions
Filters
Foams
Gels
Heat of solution
Membranes
Osmosis
Particle size
Precipitation
Sedimentation
Sols
Solubility
Solutions
Surface phenomena
Suspensions
Thixotropy

14.95 LIQUID HELIUM

Helium/
    liquid
    liquid, sound propagation
    solid
Quantum fluids/
    boson systems
    fermion systems

15.00 CHANGE OF STATE

Boiling
Boiling point
Condensation
Critical constants, thermal
Distillation
Drying
Equations of state
    gases
    liquids
    solids
Evaporation
Freezing
Heat of fusion
Heat of sublimation
Heat of transformation
Heat of vaporization
Humidity
Liquefaction, gases
Melting
Melting point
Phase equilibrium
Phase transformations
Sublimation
Supercooling
Vapour pressure
Vapour pressure measurement
Vaporization

16.00 SOLID STATE STRUCTURE AND MECHANICAL PROPERTIES

Crystal properties
Equations of state/
    solids
Solids/
    structure
    theory

16.10 NON-CRYSTALLINE STATE

Amorphous state
Glass
Plastics
Polymers
Rubber
Vitreous state
Waxes

16.20 SURFACE AND INTERFACE PHENOMENA

Surface energy
Surface measurement
Surface phenomena
Surface structure

16.23 Films

Crystals/
    growth
Epitaxy
Evaporation
Films, solid/
    electrical properties
    magnetic properties
    optical properties
Sputtering
Sublimation

16.25 Adsorption

Adsorbed layers
Adsorption
Heat of adsorption
Sorption

16.30 CRYSTALLOGRAPHY

Bonds
Charge compensation
Crystal chemistry
Crystal properties
Crystallography
Crystals/
    etching
    faces
    orientation
    twinning
Isomorphism
Minerals
Polymorphism
Solids/
    structure
Surface structure

6.33 Crystal growth

Crystallization
Crystals/
    growth
    whiskers
Epitaxy
Zone melting and refining

16.35 Crystal Structures, Techniques and Apparatus

- Alloys
- Amorphous state
- Crystal structure/
  - microstructure
- Crystal structure, atomic/
  - alloys
  - elements
  - inorganic compounds
  - organic compounds
- Density/
  - solids
- Electron diffraction crystallography
- Electron diffraction examination of materials
- Electron microscope examination of materials
- Electron microscopy
- Fibres
- Granular structure
- Ion microscopes
- Metallurgy
- Microscopy
- Neutron diffraction crystallography
- Neutron diffraction examination of materials
- Particle size
- Polymers
- Porous materials
- Powders
- Radiography
- Surface structure
- X-ray absorption
- X-ray crystallography/
  - apparatus
  - calculation apparatus
  - calculation methods
  - technique
- X-ray diffraction
- X-ray examination of materials
  - microstructure
  - molecular structure
- X-ray measurement
- X-ray monochromators
- X-ray reflection
- X-ray scattering
- X-ray tubes

16.40 DEFECT PROPERTIES OF SOLIDS

- Cold working
- Creep
- Crystal imperfections
  - dislocations
  - impurities
  - interstitials
  - vacancies
- Crystal structure
- Crystals
  - etching
  - twinning
- Deformation
- Elastic deformation
- Electron diffraction examination of materials
- Electron microscope examination of materials
- Heat treatment
  - alloys
- Internal friction
- Neutron diffraction examination of materials
- Plastic deformation
- Plastic flow
- Slip
- Stresses, internal
- Work hardening
- X-ray examination of materials
  - microstructure

16.45 Colour centres

- Absorption/
  - light
- Colour centres
- X-rays/
  - effects

16.50 DIFFUSION IN SOLIDS

- Diffusion in solids/
  - thermal
- Permeability, mechanical

16.60 MECHANICAL PROPERTIES OF SOLIDS

- Abrasion
- Bending
- Brittleness
- Compressibility
- Cracks
- Creep
- Deformation
- Density/
  - solids
- Elastic constants/
  - measurement
- Elastic deformation
- Elastic fatigue
- Elastic limit
- Elastic relaxation
- Elasticity
- Fracture
- Friction
- Hardness
- High-pressure phenomena and effects
- Hysteresis
- Impact
- Internal friction
- Lubrication
- Magnetoelastic waves
- Magnetomechanical effects
- Mechanical properties of substances
- Mechanical strength/
  - compressive
  - shear
  - tensile
- Photoelasticity
- Plastic deformation
- Plastic flow
- Plasticity
- Rheology
- Slip
- Strain gauges
- Stress analysis
- Stress effects
- Stress/strain relations
- Stresses, internal
- Thermoelasticity
- Thixotropy
- Torsion
- Viscoelasticity
- Wear

16.65 Metallurgy. Phase transformations

- Adhesion
- Ageing
- Alloys
- Cold working
- Corrosion
- Forming processes
- Heat treatment/
  - alloys
- Metallurgy
- Phase equilibrium
- Phase transformations/
  - solid-state
- Physical effects of radiations
- Polymorphism
- Powders
- Precipitation
- Sintering
- Solid solutions
- Solubility
- Work hardening

16.70 LATTICE MECHANICS

- Crystals/
  - lattice mechanics
- Mössbauer effect

16.80 ACOUSTICAL PROPERTIES OF SOLIDS

- Absorption/
  - acoustic waves
  - acoustic waves, ultrasonic
- Acoustic wave propagation/
  - ultrasonic
- Acoustoelectric effects
- Acousto-optical effects
- Diffraction/
  - acoustic waves
  - acoustic waves, ultrasonic
- Dispersion, acoustic/
  - ultrasonic
- Magnetoacoustic effects
- Reflection/
  - acoustic waves
  - acoustic waves, ultrasonic
- Refraction/
  - acoustic waves
  - acoustic waves, ultrasonic
- Scattering/
  - acoustic waves
  - acoustic waves, ultrasonic
- Transducers
- Transmission/
  - acoustic waves
  - acoustic waves, ultrasonic
- Velocity/
  - acoustic waves
  - acoustic waves, ultrasonic

16.90 THERMAL PROPERTIES OF SOLIDS

- Conductivity thermal/
  - measurement
  - solids
- Equations of state/
  - solids
- Heat conduction
- Specific heat/
  - solids
- Thermal expansion
- Thermodynamic properties

16.95 RADIATION INTERACTION WITH SOLIDS

- Acoustic waves/
  - effects
- Alpha-particles/
  - effects
- Beta-rays/
  - effects
- Deuterons/
  - effects
- Electron beams/
  - effects
- Energy loss of particles
- Gamma-rays/
  - effects
- Hyperons/
  - effects
- Ion beams/
  - effects
- Mesons/
  - effects
- Neutrons and antineutrons/
  - effects
- Physical effects of radiations
- Protons and antiprotons/
  - effects
- Sputtering
- X-rays/
  - effects

17.00 SOLID STATE ELECTRICAL AND MAGNETIC PROPERTIES

- Crystals/
  - internal fields

17.10 ELECTRON STATES IN SOLIDS

- Crystal electron states
  - band structure
  - excitons
  - Fermi level
  - Fermi surface
  - impurity states and effects
  - plasma
  - polarons
  - surface
  - transport processes
- Crystal properties
- Cyclotron resonance
- de Haas-van Alphen effect
- Electron beams/
  - effects
- Electron gas
- Electron pairs/
  - annihilation
- Electrons
  - absorption
  - radiation
  - scattering
- Hall effect
- Kondo effect
- Magnetoacoustic effects
- Magnetoresistance
- Metals/
  - theory
- Piezoresistance
- Skin effect
- Solids/
  - theory
- Surface phenomena

17.20 ELECTRICAL PROPERTIES OF SOLIDS

- Acoustoelectric effects
- Conductivity, electrical/
  - measurement
  - solids
- Contacts, electrical
- Crystal electron states
- Eddy-currents
- Electrical properties of substs.
- Electron gas
- Electro-optical effects
- Films, solid/
  - electrical properties
- Fluctuations
- Hall effect
- Magnetoelectric effects
- Magnetoresistance
- Magnetothermal effects
- Noise, electrical
- Piezoelectricity
- Piezoresistance
- Space charge

17.22 Metallic Conducting Properties

- Electron gas
- Hall effect
- Magnetoelectric effects
- Magnetoresistance
- Metals/
  - theory
- Piezoresistance
- Semimetals
- Skin effect

17.24 Superconducting Properties

- Storage devices
- Superconducting devices
- Superconducting magnets
- Superconducting materials/
  - lead
  - niobium
- Superconductivity/
  - type II

17.26 Semiconducting Properties

- Acoustoelectric effects
- Contacts, electrical
- Electron gas
- Electro-optical effects
- Fluctuations
- Gunn effect
- Hall effect
- Magnetoelectric effects
- Magnetoresistance
- Magnetothermal effects
- Noise, electrical
- Piezoelectricity
- Piezoresistance
- Semiconductors
- Space charge
- Semiconducting materials/
  - gallium arsenide
  - germanium
  - indium antimonide
  - silicon

17.28 Semiconductor and Interface devices

- Gunn effect
- Microwave techniques and devices
- Rectifiers
- Semiconductor devices/
  - diodes
  - junctions
  - transistors
  - tunnel and interface devices
- Storage devices

17.29 Dielectric Properties

- Breakdown, electric/
  - solids
- Contacts, electrical
- Dielectric devices
- Dielectric measurement
- Dielectric phenomena
- Dielectric properties of substs./
  - solids
- Electrets
- Electric charge
- Electric fields
- Electric strength
- Electrostriction
- Ferroelectric materials/
  - barium titanate
- Ferroelectric phenomena
- Hysteresis
- Ionic conduction, solids
- Piezoelectric oscillations
- Piezoelectricity
- Pyroelectricity
- Relaxation
- Rochelle salt
- Space charge/
  - solid
- Triboelectricity

17.40 THERMOELECTROMAGNETIC PROPERTIES

- Magnetoelectric effects
- Magnetothermal effects
- Thermocouples
- Thermoelectricity

17.50 PHOTOELECTRIC PROPERTIES

- Photoconducting devices
- Photoconductivity
- Photoelectricity
- Photoelectromagnetic effects
- Photovoltaic effects

17.52 ELECTRON AND ION EMISSION BY SOLIDS

- Cathodes/
  - oxide
- Electron emission
  - field emission
  - photoelectric
  - secondary
  - thermionic
- Ion emission/
  - secondary
  - thermionic
- Ionization/
  - solids
- Ionization, surface
- Work function

17.60 MAGNETIC PROPERTIES OF SOLIDS

- Antiferromagnetism
- de Haas-van Alphen effect
- Diamagnetism
- Electron diffraction examination of materials
- Electron microscope examination of materials
- Exchange interactions
- Ferrimagnetism
- Ferrites
- Ferromagnetism/
  - spin-wave theory
- Films, solid/
  - magnetic properties
- Gyromagnetic ratio
- Hall effect
- Hysteresis
- Kondo effect
- Magnetic devices
- Magnetic fields/
  - effects
- Magnetic properties of dissolved atoms in dilute alloys
- Magnetic properties of substs.
  - antiferromagnetic
  - diamagnetic
  - ferrimagnetic
  - ferromagnetic
  - paramagnetic
  - transitions
- Magnetism
- Magnetization process
- Magnetization state/
  - domains
- Magnetoacoustic effects
- Magnetoelastic waves
- Magnetoelectric effects
- Magneto-optical effects
- Magnetoresistance
- Magnetostriction
- Magnetothermal effects
- Neutron diffraction examination of materials
- Paramagnetism
- Zeeman effect

17.62 Paramagnetic Properties

- Magnetic properties of substances/
  - paramagnetic
- Paramagnetism

17.64 Ferromagnetic Properties

- Exchange interactions
- Ferromagnetism/
  - spin-wave theory
- Films, solid/
  - magnetic properties
- Hysteresis
- Magnetic devices
- Magnetic properties of substances/
  - ferromagnetic
- Magnetization process
- Magnetization state/
  - domains
- Storage devices

17.66 Ferrimagnetic Properties. Ferrites

- Exchange interactions
- Ferrimagnetism
- Ferrites
- Hysteresis
- Magnetic devices
- Films, solid/
  - magnetic properties
- Magnetic properties of substances/
  - ferrimagnetic
- Storage devices

17.68 Antiferromagnetic Properties

- Antiferromagnetism
- Exchange interactions
- Magnetic properties of substances/
  - antiferromagnetic

17.69 Magnetic Relaxation Phenomena

- Ferromagnetic relaxation
- Magnetic resonance and relaxation
- Nuclear magnetic resonance and relaxation
- Paramagnetic resonance and relaxation

18.00 SOLID STATE SPECTROSCOPY AND OPTICAL PROPERTIES

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18.52 Paramagnetic Resonances and Relaxation

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18.54 Nuclear Magnetic Resonance and Relaxation

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- Atmospheric pressure and density
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- Clouds
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  - radioactivity
  - structure
  - temperature
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SUBSTANCES

Chemical elements and inorganic compounds

All the chemical elements are listed by name, followed by their compounds, e.g. "Cadmium, Cadmium compounds".

"Hydrogen" is subdivided by the subheadings "neutral atoms", "neutral molecules" and "ions". "Deuterium" and "Tritium" are independent headings. "Hydrogen compounds" is supplemented by "Ice", "Steam" and "Water".

"Oxygen" is supplemented by "Ozone" and "Carbon" is supplemented by "Diamonds" and "Graphite"

The following inorganic compounds are further subdivided by subheadings as shown:-

- Barium compounds/
  - barium titanate*
- Cadmium compounds/
  - cadmium sulphide
- Calcium compounds/
  - calcium fluoride
- Gallium compounds/
  - gallium arsenide†
- Indium compounds/
  - indium antimonide†
- Lithium compounds/
  - lithium fluoride
- Nitrogen compounds/
  - ammonia
  - ammonium compounds
- Potassium compounds/
  - potassium bromide
  - potassium chloride
- Sodium compounds/
  - sodium chloride
- Zinc compounds/
  - zinc sulphide

* Ferroelectric properties are listed under "Ferroelectric materials/barium titanate"

† Semiconducting properties are listed under the corresponding subheadings of "Semiconducting materials"

Organic compounds

Organic compounds are grouped under headings "Organic compounds", "Polymers", "Plastics", "Proteins". "Rochelle salt" is an independent heading.

Co-ordination compounds

Metallic co-ordination compounds are regarded as inorganic with a few exceptions and are indexed under the appropriate metallic compound heading, (not under organic compounds) e.g. Ni complex, bis (dimethylglyoximato) nickel (II) under Nickel compounds.

Substance groups

In addition there are the following headings for groups of elements, compounds or substances:-

- Actinides
- Actinide compounds
- Alkali metals
- Alkali-metal compounds/
  - halides
- Alkaline-earth metals
- Alkaline-earth compounds
- Ferrites
- Ferroelectric materials/
  - barium titanate‡
- Garnets
- Halogens
- Inert gases
- Metals
- Minerals
- Rare-earth metals
- Rare-earth compounds
- Semiconductors
- Semiconducting materials/
  - gallium arsenide§
  - germanium§
  - indium antimonide§
  - silicon§
- Superconducting materials/
  - lead‖
  - niobium‖
- Transition metals
- Transition-metal compounds

‡ Used for ferroelectric properties only

§ Used for semiconducting properties only

‖ Used for superconducting properties only

Alloys

General papers on alloys are indexed under "Alloys". Alloys of specified composition are listed under, either

(i) special alloy headings (there are five of them: "Aluminium alloys", "Copper alloys", "Iron alloys", "Nickel alloys", "Steel"), e.g. Al-Ni alloys under "Aluminium alloys", and "Nickel alloys".

(ii) compounds of the named elements, e.g. Mn-Zn alloys under "Manganese compounds" and "Zinc compounds". Silicon-iron under "Iron alloys" and "Silicon compounds".

Special substances and materials

There are also the following special headings for certain common substances:-

- Air
- Blood
- Ceramics
- Clay
- Coal
- Concrete
- Fibres
- Gelatin
- Glass
- Mica
- Optical materials
- Paper
- Porous materials
- Powders
- Quartz
- Rubber
- Ruby
- Sand
- Seawater
- Soil
- Waxes
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